



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,390	12/10/2003	Mark Andrew Lillis	PES-0183	1389
7590 Philmore H. Colburn II Cantor Colburn LLP 55 Griffin Road South Bloomfield, CT 06002		05/08/2007	EXAMINER SCHNEIDER, CRAIG M	
			ART UNIT 3753	PAPER NUMBER
			MAIL DATE 05/08/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/707,390		LILLIS, MARK ANDREW	
	<b>Examiner</b>		<b>Art Unit</b>	
	Craig M. Schneider		3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-27 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7,16-27 and 32 is/are allowed.
- 6) ☒ Claim(s) 1-6,9-15,31 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/10/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 13-15, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujita (US2002/0428502).

Fujita discloses a gas regulation system (20) comprising a manifold (the piping 40 and to each block valve 42, 44, 46, and 48), a plurality of control modules (42, 44, 46, and 48) in fluid communication with the manifold, wherein each control module comprises an actuable valve in fluid communication with an associated gas storage device (22, 24, 26, and 28), and a power source (60) in electrical communication with each of the actuable valves, wherein the power source has sufficient power output to actuate only one of the actuatable valves at a time to an actuated state and insufficient power output to simultaneously actuate more than one of the actuatable valves to an actuated state.. The power source is "configured to" prevent simultaneous actuation of multiple valves because it is capable of only actuating one valve at a time. Fujita implicitly discloses that only one valve is actuated in certain modes; thus actuation of the other valves is prevented in those modes and therefore there is insufficient power sent out to actuate other valves in the system. The power source is "adapted to

Art Unit: 3753

prevent..." because there are separate actuation signals sent to each of the valves (see Fig. 1) and there is a mode in which the valves are actuated one at a time which inherently prevents the actuation of the other valves.

Regarding claim 13, the system comprising an electrochemical cell system in fluid communication with the manifold, wherein the electrochemical cell system comprises a fuel cell (page 1, paragraph 13).

Regarding claim 14, wherein the power source is in electrical communication with a manifold controller adapted to provide operational logic to each of the circuits of the actuatable valves.

Regarding claim 15, wherein the gas is a hydrogen gas (page 1, paragraph 2).

Regarding claim 31, wherein each one of the control modules further comprise one or more of gas connectors (32, 34, 36, and 38 and 40 to each of the modules) and electrical connectors (the dashed line to 43, 45, 47, 49 from 60).

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Agricola et al. (US2002/0134342).

Fujita discloses all the features of the claimed invention except that the system comprises a directional pressure-reducing device disposed between the manifold and the control module. Agricola et al. disclose that the pressure reducing valve (7) is

Art Unit: 3753

disposed between the manifold (1) and the control valves (8 and 9)(page 1; paragraph 17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the pressure reducing valve as disclosed by Agricola et al. onto the system of Fujita, in order to provide the gas at the required working pressure for the components.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Takeda et al. (US2002/0092575).

Fujita discloses all the features of the claimed invention except that the system comprises a directional pressure-reducing device disposed between the control module and the gas storage device. Takeda et al. disclose that the pressure reducing valve is disposed immediately outside the gas storage device.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the pressure reducing valve of Takeda et al. onto the system of Fujita, in order to reduce the pressure of the gas to a workable pressure.

6. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Belcher, Jr. (2,793,813).

Fujita discloses all the features of the claimed invention except that the gas regulation system further comprises an impedance safety monitor device in electrical communication with the power source. Belcher, Jr. discloses the use of an impedance device to take the place of a sensing element in a control circuit that would sense the condition of the system and further has a shut down component (col. 1, lines 56-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the impedance device of Belcher, Jr. onto the system of Fujita, in order to have a sensing element that could shut down the system if a problem occurred.

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita.

The examiner took official notice that the use of an impedance safety monitor device is old and well known in the art and would be combined with the device of Fujita for reasons that are old and well known in the art. Since applicant did not traverse the examiner's assertion of official notice, this is taken as admitted prior art (see MPEP 2144.03).

8. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Petite et al. (US2002/0125998).

Fujita discloses all the features of the claimed invention except that the control modules further comprise a local control-processing unit in electrical communication with a manifold controller. Petite et al. disclose the use of a central controller (130) and a local controller (110)(page 3, paragraph 42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the local controllers of Petite et al. onto the system of Fujita, in order to have control of the system local to the system.

Regarding claim 11, the system comprising a test module in electrical communication with the manifold controller (page 2, paragraph 16-17).

Art Unit: 3753

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Watson (3,322,135).

Fujita discloses all the features of the claimed invention except that the actuatable valves comprise a solenoid valve. Watson discloses solenoid valves (23) on the discharge side of tanks (col. 4, lines 47-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the solenoid valves as disclosed by Watson onto the actuatable valve of Fujita, in order to utilize more cost effective valves.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita-Agricola et al. as applied to claim 2 above, and further in view of Takeda et al..

Fujita-Agricola et al. disclose all the features of the claimed invention except that the pressure reducing valve comprises a check valve adapted to provide a substantially unimpeded flow of a gas from the manifold to the control modules. Takeda et al. disclose a valve structure that includes both a pressure reducing valve (21 and 22) and a check valve (32) as seen in Figures 2 and 3 which is adapted to provide a substantially unimpeded flow of a gas (page 3, paragraph 45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the check valve/pressure reducing valve combination as disclosed by Takeda et al. onto the system of Fujita-Agricola et al., in order to have the uninhibited flow of gas into the cylinders.

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita in view of Dowdall.



Fujita discloses all the features of the claimed invention except a housing.

Dowdall discloses that an enclosure would be used for protection from the environment (col. 1, lines 4-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an enclosure as taught by Dowdall onto the system of Fujita, in order to protect the equipment.

12. Claims 1, 10, 14, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over McJones (3,719,196) in view of Fujita.

McJones discloses a gas regulation system comprising a manifold (62), a plurality of control modules (20, 22, and 24) in fluid communication with the manifold (col. 5, lines 1-6), wherein each control module comprises an actuatable valve in fluid communication with an associated gas storage device (14, 16, and 18)(col. 3, line 63 to col. 4, line 7) and that more than one valve will not be actuated at a time (col. 2, lines 9-12). McJones does not disclose a power source in electrical communication with each of the actuatable valves. Fujita discloses the use of a power source for controlling the actuatable valves and also that the valves are electrical.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the electrical controls and the electrically actuatable valves of Fujita onto the system of McJones, in order to electrically actuate the valves.

Regarding claim 10, McJones discloses the serial circuits and modifying it in view of Fujita would have electrical circuits in series.



Regarding claim 14, wherein the power source is in electrical communication with a manifold controller adapted to provide operational logic to each of the circuits of the actuatable valves.

Regarding claim 31, wherein each one of the control modules further comprise one or more of gas connectors (32, 34, 36, and 38 and 40 to each of the modules) and electrical connectors (the dashed line to 43, 45, 47, 49 from 60).

13. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Agricola et al. (US2002/0134342).

McJones/Fujita disclose all the features of the claimed invention except that the system comprises a directional pressure-reducing device disposed between the manifold and the control module. Agricola et al. disclose that the pressure reducing valve (7) is disposed between the manifold (1) and the control valves (8 and 9)(page 1, paragraph 17).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the pressure reducing valve as disclosed by Agricola et al. onto the system of McJones/Fujita, in order to provide the gas at the required working pressure for the components.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Takeda et al. (US2002/0092575).

Art Unit: 3753

McJones/Fujita disclose all the features of the claimed invention except that the system comprises a directional pressure-reducing device disposed between the control module and the gas storage device. Takeda et al. disclose that the pressure reducing valve is disposed immediately outside the gas storage device.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the pressure reducing valve of Takeda et al. onto the system of McJones/Fujita, in order to reduce the pressure of the gas to a workable pressure.

15. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Belcher, Jr. (2,793,813).

McJones/Fujita disclose all the features of the claimed invention except that the gas regulation system further comprises an impedance safety monitor device in electrical communication with the power source. Belcher, Jr. discloses the use of an impedance device to take the place of a sensing element in a control circuit that would sense the condition of the system and further has a shut down component (col. 1, lines 56-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the impedance device of Belcher, Jr. onto the system of McJones/Fujita, in order to have more control of the system.

16. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita.

Art Unit: 3753

The examiner took official notice that the use of an impedance safety monitor device is old and well known in the art and would be combined with the device of Fujita for reasons that are old and well known in the art. Since applicant did not traverse the examiner's assertion of official notice, this is taken as admitted prior art (see MPEP 2144.03).

17. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Petite et al. (US2002/0125998).

McJones/Fujita disclose all the features of the claimed invention except that the control modules further comprise a local control-processing unit in electrical communication with a manifold controller. Petite et al. disclose the use of a central controller (130) and a local controller (110)(page 3, paragraph 42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the local controllers of Petite et al. onto the system of McJones/Fujita, in order to add more control to the system.

Regarding claim 11, the system comprising a test module in electrical communication with the manifold controller (page 2, paragraph 16-17).

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Watson (3,322,135).

McJones/Fujita disclose all the features of the claimed invention except that the actuatable valves comprise a solenoid valve. Watson discloses solenoid valves (23) on the discharge side of tanks (col. 4, lines 47-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the solenoid valves as disclosed by Watson onto the actuatable valve of McJones/Fujita, in order to utilize more cost effective valves.

19. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones-Fujita-Agricola et al. as applied to claim 2 above, and further in view of Takeda et al..

McJones-Fujita-Agricola et al. disclose all the features of the claimed invention except that the pressure reducing valve comprises a check valve adapted to provide a substantially unimpeded flow of a gas from the manifold to the control modules. Takeda et al. disclose a valve structure that includes both a pressure reducing valve (21 and 22) and a check valve (32) as seen in Figures 2 and 3 which is adapted to provide a substantially unimpeded flow of a gas (page 3, paragraph 45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the check valve/pressure reducing valve combination as disclosed by Takeda et al. onto the system of McJones-Fujita-Agricola et al., in order to have the uninhibited flow of gas into the cylinders.

20. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Fujita.

McJones/Fujita does not disclose that the system further comprises an electrochemical cell system in fluid communication with the manifold. Fujita discloses using the system with a fuel cell (page 1, paragraph 13).

Art Unit: 3753

It would have been obvious to one having ordinary skill in the art to utilize the system of McJones/Fujita with a fuel cell as taught by Fujita, in order to improve the marketability of the system.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Fujita.

McJones/Fujita discloses all the features of the claimed invention except that the system is being used with hydrogen gas. Fujita discloses that the system is being used with hydrogen (page 1, paragraph 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the McJones/Fujita system with hydrogen gas as taught by Fujita, in order to improve the marketability of the system.

22. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over McJones/Fujita as applied to claim 1 above, and further in view of Dowdall.

McJones/Fujita discloses all the features of the claimed invention except a housing. Dowdall discloses that an enclosure would be used for protection from the environment (col. 1, lines 4-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an enclosure as taught by Dowdall onto the system of McJones/Fujita, in order to protect the equipment.

***Allowable Subject Matter***

23. Claims 7, 16-27, and 32 are allowed.

***Response to Arguments***

24. Applicant's arguments filed 11/8/2006 have been fully considered but they are not persuasive. Regarding claim 1, the applicant is arguing that the prior art of Fujita does not only open one valve at a time and that more than one valve can function at one time and further to this that Fujita operates at least two valves. The language that the applicant is referring to is functional language and the burden that is placed on the examiner is if Fujita can perform the function. The examiner asserts that Fujita is capable of opening only one valve at a time and since this is the case the control unit would only send a single to one valve and when this single is sent only enough power is sent to one valve to open it and no more than the power needed to open the valve. Fujita anticipates the functional claim language as presented. Further the power source is "configured to prevent..." because there are separate actuation signals sent to each of the valves (see Fig. 1) and there is a mode in which the valves are actuated one at a time which inherently prevents the actuation of the others. The applicant is further arguing the combination of McJones and Fujita. The argument is that Fujita will not work with McJones and would not allow one valve to stay open at a time since Fujita requires two valves to be operated at the same time. The examiner is not combining Fujita and McJones in that way. The examiner is simply taking the electrical control system of Fujita and using on the valves of McJones, in order to electrically actuate the valves. Further to this point Fujita can be used to control one valve at a time as explained above by the examiner. Dowdall is simply used to protect the system from the environment.

***Conclusion***

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig M. Schneider whose telephone number is (571) 272-3607. The examiner can normally be reached on M-F 8:30 -5:00.

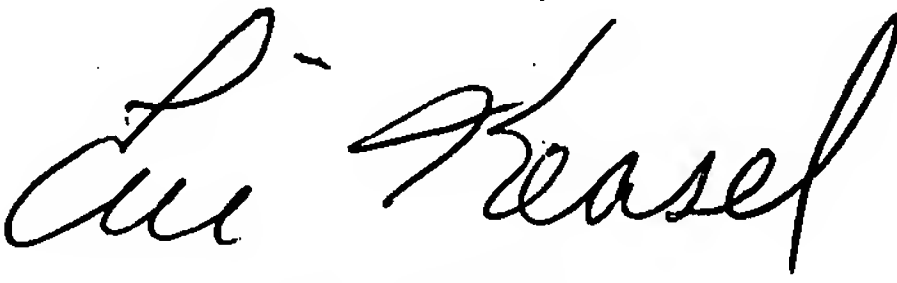
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 3753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMS *cms*  
May 2, 2007

  
ERIC KEASEL  
**SUPERVISORY PATENT EXAMINER**  
TECHNOLOGY CENTER 3700